This document is a portion of the *Draft Cruise Ship Discharge Assessment Report* (*Draft Report*), published on December 20, 2007. The reference number is EPA 842-R-07-005. The entire *Draft Report* can be accessed at http://www.epa.gov/owow/oceans/cruise_ships/disch_assess.html.

Draft Cruise Ship Discharge Assessment Report

Section 5: Solid Waste

December, 2007

Section 5: Solid Waste

Solid waste, as defined in section 1004(27) of the Resource Conservation and Recovery Act (RCRA), is the garbage, refuse, sludge, rubbish, trash, and other discarded materials resulting from industrial, commercial, and other operations, as well as that disposed of every day by individuals, businesses, and communities. Solid waste can be either non-hazardous or hazardous waste. On most cruise ships, solid waste is managed by utilizing a multifaceted strategy that includes source reduction, source segregation for waste streams, waste minimization, and recycling. According to ADEC (2001), 75 to 85 percent of trash is generally incinerated onboard, and the ash is typically discharged at sea; some solid waste is landed ashore for disposal or recycling (CRS, 2007).

This section discusses the current state of information about solid waste, the laws regulating solid waste from vessels, how solid waste is managed on cruise ships, the potential environmental impacts of cruise ship solid waste, and federal actions taken to address solid waste from cruise ships.

5.1 What is solid waste and how much is generated on cruise ships?

Solid waste is the garbage, refuse, sludge, rubbish, trash, and other discarded materials resulting from industrial, commercial, and other operations, as well as that disposed of every day by individuals, businesses, and communities. Solid waste can be either non-hazardous or hazardous waste. Non-hazardous waste, for example, may be in the form of trash and the waste associated with product packaging, cans, bottles, food waste, newspapers, product and machinery parts, disposable products, and recyclable products; this waste may be solid, liquid, semisolid, or gaseous material. This section discusses non-hazardous solid waste generated on cruise ships. Hazardous waste, however, is a type of solid waste or combination of solid wastes, which, because of its quantity, concentration or physical, chemical, or infectious characteristics may cause or significantly contribute to an increase in mortality or illness or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed or otherwise managed. Hazardous waste generally contains hazardous substances which can be liquids, solids, or contained gases and must be handled, tracked, treated, and disposed of separately from other types of solid waste. Hazardous waste generated on cruise ships is discussed separately in Section 6.

Solid waste generated onboard a cruise ship typically comprises the materials used for packaging products for transportation or storage, waste generated by passenger and crew activity, and food waste. More specifically, the types of solid waste generated on a ship can include food waste, glass, paper, wood, cardboard, incinerator ash, metal cans, and plastics. Table 5-1 identifies some types of common solid waste items, including specific examples, generated aboard cruise ships.

Table 5-1. Types and Specific Examples/Descriptions of Solid Waste Generated on Cruise Ships

Type of Solid Waste	Examples and Descriptions
Cardboard	Dunnage (lining and packing materials that float) and cardboard from all manner of packaging materials
Paper	Paper and packaging
Plastic	Synthetic ropes, fishing nets, plastic containers, plastic bags, biodegradable plastics, Poly-Ethylene Terephthalate (P.E.T.) plastics, and High Density Polyethylene (HDPE) plastics
Wood	Wood pallets and waste wood
Glass	Chipped or broken glasses, food and beverage jars, and bottles
Metal cans	Aluminum soft drink cans, tin cans from the galley, and steel cans from ship maintenance operations
Food waste	Wastes derived in whole or part from fruits, vegetables, meats, or other plant or animal material (includes food scraps, table refuse, galley refuse, food wrappers or packaging materials contaminated with food residue)
Incinerator ash	Ash generated from the incineration of packing materials, paper and cardboard wastes, etc.
Food wrappers and packaging	Paper and plastic wrapping/packaging materials with food residue

According to a 1999 Royal Caribbean Cruises Environmental Report, packaging materials from consumables and spare parts for a ship can generate up to 15 tons of waste in a single day. Table 5-2 presents the estimates of certain types of solid waste generated per week on an individual vessel in the Holland America Lines and Royal Caribbean Cruises fleets.

Table 5-2. Estimates of Solid Waste Generated Per Vessel per Week

	Holland America Lines	Royal Caribbean Cruises
Dunnage	30 cubic meters	60 cubic meters
Glass and Cans	6,000 lbs of glass 450 lbs of cans	5 cubic meters of glass 2.5 cubic meters of cans
Food Wastes	12 cubic meters	12 cubic meters

Sources: ADEC, 2002 and Royal Caribbean Cruises, 1999

The amount of solid waste generated by cruise ships varies from ship to ship, based on the size of the vessel, number of passengers and crew, and consumption of material. Compared to other types of vessels, cruise ships generate large volumes of solid waste. Environmental Resources Limited (1991) estimated that a cruise ship generates 70 times more solid waste per day than a typical cargo ship. It has been further estimated that 24% of the solid waste generated by vessels worldwide (by weight) comes from cruise ships (National Research Council, 1995).

With large cruise ships carrying several thousand passengers, the amount of waste generated in a given day can be considerable. One large cruise ship of 2,500 passengers and 800 crew (total 3,300 persons onboard) can generate 1 ton of garbage from normal operations in a day (National Research Council, 1995). On average, each cruise ship passenger generates at least two pounds of non-hazardous solid waste per day (CELB, 2003). In addition to that, each cruise ship passenger disposes of two bottles and two cans (both of which are recyclable materials) per day

(CELB, 2003). Table 5-3 presents various estimates of the amount of solid waste a passenger generates in a given day during a cruise.

Table 5-3. Estimates of Solid Waste Generated per Person per Day on a Cruise Ship

Source of Data	Trash Generated (lbs/person/day)
Environmental Resources Limited	7.7
Florida Caribbean Cruise Association	0.7
Holland America Line	1.8
Organization of Eastern Caribbean States (OECS) Waste Management Study	6.5
Seebacher	5.7

Source: Simmons & Associates, 1994

The newest addition in Royal Caribbean's Freedom family of ships, the *Liberty of the Seas*, is currently the largest cruise ship at 1,112 ft long and carries up to 3,634 passengers and 1,360 crew. Building even larger cruise ships is on the horizon with Royal Caribbean building Genesis class ships that will be almost 1,200 feet long (Bell, 2007). Over the past two decades, the average ship size has been increasing at the rate of roughly 90 ft every 5 years (Bell, 2007). As the size and number of passengers these cruise ships can carry increases, the volume of wastes generated – and discharged – will presumably increase as well.

5.2 What laws apply to solid waste from cruise ships?

5.2.1 International Convention for the Prevention of Pollution from Ships and Act to Prevent Pollution from Ships

The International Convention for the Prevention of Pollution from Ships

In 1987, the United States ratified Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL). MARPOL Annex V pertains to different types of garbage, including plastics, and specifies the distances from land and the manner in which they may be disposed. More specifically, the Annex prohibits the at-sea disposal of plastic wastes and regulates the distance from shore that ships may dispose of other items that constitute garbage.

Under Annex V, the term garbage includes "all kinds of victual, domestic and operational waste excluding fresh fish and parts thereof, generated during the normal operation of the ship and liable to be disposed of continuously or periodically except those substances which are defined or listed in other Annexes." The Annex also requires governments to ensure the provision of facilities at ports and terminals for the reception of garbage. Annex V sets more stringent discharge standards for specifically identified "special areas." The special areas are particular areas of water that have special significance and require more protective measures than other areas. The special areas identified by Annex V are the Mediterranean Sea, Baltic Sea, Black Sea, Red Sea, Gulfs area, North Sea, Antarctic, and Wider Caribbean Region. In addition, the Annex requires some ships (i.e., depending on size and passenger load) to maintain Garbage Record Books, develop Garbage Management Plans, and display placards that outline the disposal requirements.

Act to Prevent Pollution from Ships

The Act to Prevent Pollution from Ships (APPS; 33 U.S.C. § 1901 et seq.) was amended by the Marine Plastic Pollution Research and Control Act of 1987, which implements the provisions of Annex V of MARPOL relating to garbage and plastics. APPS applies to all U.S. flagged ships anywhere in the world, and, with respect to Annex V, to all foreign flagged vessels operating in the navigable waters or exclusive economic zone of the United States or while at a port or terminal under the jurisdiction of the United States. APPS and its implementing regulations (33 CFR 151.51-77) prohibit the discharge of all garbage within three miles of shore; certain types of garbage from 3-25 miles offshore; and plastic anywhere. Vessels are also required to record each discharge or incineration of garbage in a Garbage Record Book.

Under APPS, the definition of "ship" includes fixed or floating platforms. There are separate garbage discharge provisions applicable to these units. For these platforms, and for any ship within 500 meters of these platforms, disposal of certain types of garbage is prohibited. Additionally, all manned, oceangoing U.S. flagged vessels of 12.2 meters or more in length that are engaged in commerce, and all manned, fixed, or floating platforms subject to the jurisdiction of the United States, are required to keep records of garbage discharges and disposals. The Coast Guard regularly inspects vessel discharge records and logbooks required by the MARPOL 73/78 Convention, and investigates all allegations of illegal discharges on the high seas or within United States waters. Receipts and record-keeping for Annex V waste streams from ships are addressed in MARPOL Annex V, Regulation 9.

Applicable Coast Guard Regulations

The Coast Guard generally has the primary responsibility to prescribe and enforce the regulations necessary to implement APPS in the United States. The following Coast Guard regulations pertain to the management of solid waste on ships:

- Every manned oceangoing ship of 400 gross tons and above and every ship certified to carry 15 passengers or more shall ensure that a written record is maintained on the ship for the following discharge or disposal operations:
  - discharge overboard,
  - discharge to another ship,
  - discharge to a reception facility, and
  - incineration on the ship (33 CFR 151.55).

- Each manned, oceangoing ship of 40 feet or more in length must have a garbage management plan in place and each person handling the garbage must follow the plan (33 CFR 151.57).

- Each ship of 26 feet or more must ensure that appropriate placards outlining disposal requirements are placed in prominent locations and in sufficient numbers for both passengers and crew (33 CFR 151.59).

- No person onboard any ship may discharge garbage into the navigable waters of the United States. Navigable waters means the waters of the United States, including the territorial seas (i.e., the belt of seas measured from the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking

the seaward limit of inland waters, and extending seaward a distance of three miles). No person onboard any ship may discharge into the sea, or into the navigable waters of the United States, plastic or garbage mixed with plastic, including but not limited to synthetic ropes, synthetic fishing nets, and plastic garbage bags. All garbage containing plastics must be discharged ashore or incinerated (33 CFR 151.66 and 151.67).

- For vessels operating outside a special area, no person may discharge, into the sea, garbage that is separated from plastic, if the distance from nearest land is less than: (1) 25 nautical miles for dunnage, lining and packing materials that float; or (2) 12 nautical miles for victual wastes and all other garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse, except that, such garbage may be discharged outside of three nautical miles from nearest land after it has been passed through a grinder or comminuter (i.e., pulverizer) (33 CFR 151.69).

Table 5-4 provides a summary of garbage discharge restrictions per 33 CFR Part 151 for vessels operating both in special areas and outside of special areas.

Table 5-4. Summary of Garbage Discharge Restrictions for Vessels

Garbage Type	All Vessels Except Fixed or Floating Platforms and Associated Vessels	
	Outside special areas (33 CFR 151.69)	**In special areas[2] (33 CFR 151.71)**
Plastics, including synthetic ropes and fishing nets and plastic bags	Disposal prohibited (33 CFR 151.67)	Disposal prohibited (33 CFR 151.67)
Dunnage, lining and packing materials that float	Disposal prohibited less than 25 miles from nearest land and in the navigable waters of the U.S.	Disposal prohibited (33 CFR 151.71)
Paper, rags, glass, metal bottles, crockery and similar refuse	Disposal prohibited less than 12 miles from nearest land and in the navigable waters of the U.S.	Disposal prohibited (33 CFR 151.71)
Paper, rags, glass, etc. comminuted or ground[1]	Disposal prohibited less than 3 miles from nearest land and in the navigable waters of the U.S.	Disposal prohibited (33 CFR 151.71)
Victual waste not comminuted or ground	Disposal prohibited less than 12 miles from nearest land and in the navigable waters of the U.S.	Disposal prohibited less than 12 miles from nearest land
Victual waste comminuted or ground[1]	Disposal prohibited less than 3 miles from nearest land and in the navigable waters of the U.S.	Disposal prohibited less than 12 miles from nearest land
Mixed garbage types[3]	See Note 3	See Note 3

Source: 33 CFR 151.51- 151.77 Appendix A

[1] Comminuted or ground garbage must be able to pass through a screen with a mesh size no larger than 25 mm (1 inch) (33 CFR 151.75).

[2] Special areas under Annex V are the Mediterranean, Baltic, Black, Red, and North Seas areas, the Gulfs area, the Antarctic area, and the Wider Caribbean region, including the Gulf of Mexico and the Caribbean Sea (33 CFR 151.53).

[3] When garbage is mixed with other substances having different disposal or discharge requirements, the more stringent disposal restrictions shall apply.

- The regulations applicable to port reception facilities for garbage are published at 33 CFR Part 158. Under those regulations, the Coast Guard administers the reception facility "Certificate of Adequacy" (COA) program for certification, including periodic inspection, of the port reception facilities to which those regulations apply. All port facilities and terminals under the jurisdiction of the United States, including commercial fishing facilities, mineral and oil shore bases, and recreational boating facilities, must have a garbage reception facility which meets the regulatory requirements for adequacy. 33 CFR 158.133(c). These regulations apply to U.S. ports and terminals that receive garbage from cruise ships. Though only a subset of those ports require a COA, (see 33 CFR 158.135(c) for COA criteria with respect to Annex V wastes), Coast Guard field units regularly inspect all port reception facilities for adequacy, regardless of the requirement for a COA, and investigate all allegations of inadequate reception facilities.

5.2.2 Clean Water Act

As a general matter, the Clean Water Act (CWA; 33 U.S.C. § 1251 et seq.) prohibits any person from discharging any pollutant from any point source into waters of the United States, which includes the territorial seas (i.e., the belt of seas measured from the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters, and extending seaward a distance of three miles), except in compliance with a National Pollutant Discharge Elimination System (NPDES) permit or as otherwise authorized under the Act. The term "point source" is defined to include a "vessel or other floating craft." The term "pollutant" does not include sewage from vessels (within the meaning of CWA section 312). Outside the territorial seas, i.e., in the contiguous zone or the ocean, the addition of any pollutant from a "vessel or other floating craft" is not a "discharge of pollutants," and therefore does not require an NPDES permit (CWA section 502(12)(b)). The addition of any pollutant to the waters of the contiguous zone or ocean from any point source *other* than a "vessel or other floating craft" is a "discharge of pollutants," and therefore does require an NPDES permit. However, EPA has interpreted this permitting requirement to apply to certain discharges from a vessel that operates in a capacity other than as a means of transportation such as when used as an energy or mining facility, a storage facility or a seafood processing facility, or when secured to the bed of the ocean, contiguous zone or waters of the United States for the purpose of mineral or oil exploration or development (40 CFR 122.3(a)).

In addition, EPA regulations (40 CFR 122.3(a)) have excluded discharges incidental to the normal operation of a vessel (for example, effluent from properly functioning marine engines, laundry, shower, and galley sink wastes) from the requirement of an NPDES permit.[1] This regulatory exclusion does not apply to discharges of rubbish, trash, garbage, or other such materials discharged overboard a vessel.

[1] On September 18, 2006, the United States District Court for the Northern District of California upheld a challenge to EPA's denial of a petition to withdraw a long-standing regulation that excluded discharges incidental to vessel operations from the NPDES program. The Court's order vacates, as of September 30, 2008, the exemption for discharges incidental to the normal operation of a vessel contained in 40 CFR 122.3(a). Nothing in the decision, however, affects the prohibition on the unpermitted discharge of rubbish, trash, garbage, or other such materials discharged overboard. EPA has since appealed the District Court's order to the U.S. Court of Appeals for the Ninth Circuit.

5.2.3 National Marine Sanctuaries Act

The National Marine Sanctuaries Act (NMSA; 16 U.S.C. § 1431 et seq.), as amended, authorizes the National Oceanic and Atmospheric Administration (NOAA) to designate as National Marine Sanctuaries areas of the marine environment that have special aesthetic, ecological, historical, or recreational qualities, and to provide comprehensive and coordinated conservation management for such areas. The National Marine Sanctuary Program manages 13 sanctuaries and the Papahānaumokuākea Marine National Monument. Designated sanctuaries are managed according to site-specific management plans developed by NOAA that typically prohibit the discharge or deposit of most material. Under NOAA's implementing regulations for the NMSA, it is illegal to discharge solid waste into most national marine sanctuaries.

5.2.4 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA; 42 U.S.C. § 6901 et seq.) is the federal law that, among other things, defines and regulates solid waste and hazardous waste. RCRA is designed to minimize the hazards of waste disposal, conserve resources through waste recycling, recovery, and reduction, and ensure waste management practices that are protective of human health and the environment. In order to achieve these goals, RCRA established a Solid Waste Program (RCRA Subtitle D) and a Hazardous Waste Program (RCRA Subtitle C).[2]

RCRA Subtitle D encourages environmentally-sound solid waste management practices that maximize reuse and recycling efforts, and establishes regulations that specify how solid waste disposal facilities should be designed and operated.

5.2.5 Marine Protection, Research, and Sanctuaries Act

The Marine Protection, Research, and Sanctuaries Act (MPRSA, 33 U.S.C. § 1401 et seq.) (also called the Ocean Dumping Act) prohibits (1) the transportation of any material from the United States for the purpose of disposal in ocean waters without a permit; (2) the transportation of any material by U.S. agencies or by U.S. flagged vessels or aircraft for the purpose of disposal in ocean waters without a permit; and (3) any person from dumping, without a permit, any material transported from a location outside the United States into the U.S. territorial seas or into the contiguous zone, to the extent it may affect the territorial seas or the territory of the United States. This Report does not address the transportation of materials that would require an ocean dumping permit under the MPRSA.

5.3 How do cruise ships manage solid waste?

The management of shipboard-generated waste is a challenge not only for cruise ships at sea, but also for other commercial vessels, military ships, fishing vessels, and recreational boats. Most

[2] In states with RCRA programs authorized by EPA, the authorized state RCRA program operates in lieu of the federal RCRA program. Some states have authorized RCRA programs that are more stringent than the federal RCRA program.

cruise ship trash is treated onboard (incinerated, pulped, or ground for discharge overboard) (CRS, 2007). According to ADEC (2001), 75 to 85 percent of trash is generally incinerated onboard, and the ash is typically discharged at sea; some solid waste is landed ashore for disposal or recycling (CRS, 2007). CELB (2003) states that Royal Caribbean's Vision-class ships sort, crush, and offload about 450 pounds (204kgs) of aluminum cans for recycling per weeklong trip.

Food wastes and hazardous wastes generated on cruise ships are often separated from other solid wastes and processed separately. Food waste is often pulped or compressed, and then incinerated. According to ADEC (2000), the food liquids (1,300 to 2,600 gallons per day) removed during dehydration are recycled through a pulping/compression process several times, and eventually end up in the graywater holding tanks; the remaining compressed, dehydrated food waste is incinerated. Hazardous wastes are separated from other solid wastes because onboard incinerators do not operate at the temperatures necessary to properly destroy hazardous substances. Therefore, proper waste identification and segregation of hazardous waste prior to burning is critical. As a result, waste segregation, as well as crew and passenger training, and compliance with appropriate waste handling procedures is a fundamental aspect of vessel waste management and safe discharges. Upon arriving in port, the solid waste generator (the cruise ship) offloads any remaining solid waste in accordance with applicable state solid waste management requirements.[3] Examples of Royal Caribbean Cruise's waste management practices are presented in the Table 5-5.

Table 5-5. Waste Management Practices by Royal Caribbean Cruises

Type of Waste	Management Practice
Cardboard	Packing materials are collected onboard and incinerated or offloaded for recycling or disposal.
Paper	Paper wastes are collected onboard and incinerated or offloaded for recycling or disposal.
Plastic	Plastic wastes are collected onboard and incinerated or offloaded for recycling or disposal.
Glass	Glass is collected, crushed onboard, stored, and offloaded for recycling.
Metal Cans	Cans are collected and sorted onboard to separate the aluminum cans that have a high market recycling value. Cans are crushed on board, stored, and offloaded for recycling.
Food Waste	Wet food waste is processed through giant grinders (called pulpers) that reduce the size of the food particles, which allows for more efficient removal of water by extractors. Removing excess water allows the food to be burned and managed more easily. The water removed in the process is ultimately discharged as gray water.

Source: RCC, 1999

Cruise Lines International Association (CLIA) member lines have agreed to incorporate various standards for waste stream management into their Safety Management Systems (see Section 1.3). CLIA member lines have stated that the industry is attempting to improve solid waste management both through reduction and proper waste disposal. CLIA member lines have committed to eliminate, to the maximum extent possible, the disposal of MARPOL Annex V wastes into the marine environment. Annex V ship wastes are to be minimized through purchasing practices, reuse and recycling programs, landing ashore and onboard incineration in approved shipboard incinerators. Glass, aluminum, other metals, paper, wood and cardboard are,

[3] RCRA Subtitle D established regulations addressing how solid waste disposal facilities should be designed and operated.

in most cases, recycled. Wood and cardboard may be incinerated when appropriate. Any Annex V waste that is discharged at sea is to be done in strict accordance with MARPOL and any other prevailing requirements. By adopting a multifaceted strategy that includes waste minimization, source reduction and recycling, the total waste from the industry has been reduced by nearly 50% over the last ten years (CLIA, 2006).

Source segregation for waste streams is critical for onboard waste management and CLIA member lines endorse the following (CLIA, 2006):

- source reduction,
- minimization,
- recycling,
- collection,
- processing, and
- discharge ashore.

According to CLIA (2006), this focuses the use of incinerators of CLIA member lines primarily for food waste, contaminated cardboard, some plastics, trash, and wood. With this approach, incinerator ash is not normally a hazardous waste (CLIA, 2006), as the abovementioned waste management strategies call for the removal of items that would cause the ash to be hazardous. Further, those items separated out from the wastestream would then be handled according to accepted hazardous waste protocols (see Section 6 for the hazardous waste discussion).

CLIA member lines have stated that incinerator ash will be tested at least once quarterly for the first year of operation to establish a baseline and that testing may then be conducted once a year. The member lines have further stated that a recognized test procedure will be used to demonstrate that ash is not a hazardous waste. Proper hazardous waste management procedures are to be instituted onboard each ship to assure that waste products which would result in a hazardous ash, are not introduced into the incinerator. Non-hazardous incinerator ash is disposed of at sea in accordance with MARPOL Annex V. If any ash is identified as being hazardous, it is to be disposed of ashore in accordance with RCRA. (CLIA, 2006.)

5.4 What are the potential environmental impacts associated with solid waste from cruise ships?

Waste products in the past were made from natural materials and were mostly biodegradable. Now, much of the non-hazardous waste generated on cruise ships is either not easily biodegradable or does not biodegrade at all (see Table 5-6) (CELB, 2003).

Table 5-6. Amount of Time for Objects to Dissolve at Sea

Object	Time to Dissolve
Cotton cloth	1-5 months
Rope	3-14 months
Woolen cloth	1 year
Painted wood	13 years
Tin can	100 years

Object	Time to Dissolve
Aluminum can	200-500 years
Plastic bottle	450 years

Source: Hellenic Marine Environment Protection Association (HELMEPA) (IMO, 2007)

Solid waste that enters the ocean directly or indirectly may become marine debris, and can then pose a threat to marine organisms, humans, coastal communities, and commercial industries. Marine debris may accumulate on beaches, on the surface of waters, and in the benthos. The potential environmental and physical effects of marine debris include (National Research Council, 1995):

- aesthetic degradation of surface waters and beach areas;
- physical injuries to humans and life-threatening interference with their activities;
- ecological damage caused by the interference of plastics with gas exchange between overlying waters and those in the benthos;
- alterations in the composition of ecosystems caused by debris that provides habitats for opportunistic organisms;
- entanglements of birds, fish, turtles, and cetaceans in lost or discarded nets, fishing gear, and packing materials; and
- ingestion of plastic particles by marine animals.

With regard to marine debris causing adverse impacts to human health, beach users can be injured by broken glass, cans, needles, or other litter washed ashore. Such debris may cause significant adverse economic impact in coastal communities. An informal survey conducted in 1993 for the Center for Marine Conservation revealed annual costs for beach cleanup ranging from $24,240 per mile in Virginia Beach to $119,530 per mile in Atlantic City, New Jersey (National Research Council, 1995). In addition, marine debris can pose navigational hazards to vessels, requiring time and money for repairs.

Food waste can contribute to increases in biological oxygen demand (BOD), chemical oxygen demand (COD), and total organic carbon (TOC) if discharged overboard.

5.5 What action is the federal government taking to address solid waste from cruise ships?

The Interagency Marine Debris Coordinating Committee, a federal group chaired by EPA and NOAA, is looking into ways to reduce the impact and sources of marine debris (any abandoned or uncontrolled solid material that is introduced into the ocean and coastal environment), including debris from vessels such as cruise ships. The group will provide recommendations for research priorities, educational programs, monitoring techniques, and federal agency action in a Report to Congress in 2008 as required by section 5(c) of the Marine Debris Research, Prevention, and Reduction Act (Pub. L. 109-449).

According to the IMO (2007), the U.N. General Assembly invited IMO to review MARPOL Annex V, in consultation with relevant organizations and bodies, to assess the Annex's effectiveness in addressing sea-based sources of marine debris. The U.S. Government is part of the IMO working group and the U.S. delegation assigned to the working group assembled the

appropriate federal agencies. Comprehensive review of MARPOL Annex V began in February 2006.

The Coast Guard implements ongoing inspection and compliance programs to insure the adequacy of port reception facilities. In 2006 alone, the Coast Guard conducted over 14,000 facility inspections (up from approximately 3,500 in calendar year 2000), including inspections of MARPOL Annex V port reception facilities for compliance and adequacy. During the period from 2002 to 2006, vessel arrivals at U.S. ports nearly doubled which in turn increased pressure on the capacities of U.S. ports. In meeting this increased compliance and inspection challenge, the Coast Guard issued or responded to and investigated 7,424 facility deficiencies in calendar year 2006, including reception facility deficiencies (up from 2,587 in calendar year 2000). From the time period between 2002 and 2006, the Coast Guard has documented a 26% reduction in the number of pollution incidents reported at facilities, which demonstrates the Coast Guard's continuing commitment to vigorous implementation of the pollution prevention and environmental stewardship missions which have been entrusted to the Coast Guard by Congress. This includes the administration of the COA program and insuring the adequacy of all U.S. port reception facilities for Annex V wastes from vessels.

The United States (as a party to MARPOL), with active Coast Guard engagement, participates in international work groups in efforts to standardize both Advance Notice Forms generated by vessels with respect to their reception facility needs for all wastes and a standard receipt form for such wastes. Addressing this standardization issue has been an ongoing effort by the MEPC of the IMO (since at least October 2004) to improve the performance of port reception facilities for solid waste management. The Coast Guard itself has focused on ways to address standardized reporting, including updates to implementing regulations as well as the Coast Guard instructions that provide guidance to its field units. Implementation of standardized receipts, as proposed by the IMO with Coast Guard concurrence, will enhance the capacity of Coast Guard inspectors to confirm both allegations of illegal discharges and reports of inadequate reception facilities (approximately 80 reports of inadequacies have been received and investigated so far in 2007). Coast Guard inspectors will be able to compare Advance Notice records with reception facility receipts (which are required to be kept with the vessel garbage log book for a period of two years under Section 4.2 of the Appendix to MARPOL Annex V, 2006 Consolidated Edition). Presently, reports of inadequate reception facilities are available through the International Maritime Organization's Global Integrated Shipping Information System public website at http://gisis.imo.org/Public/.

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